

D5 (CN2315412Y):  
Title of the Utility Model

Tee-Joint Connector

Abstract

Disclosed in the present utility model is a tee-joint connector, which pertains to the technology field of tubing connection. The connector is formed of a tee-joint body and characterized in disposing a sealing groove and a locking groove on an inner wall of each of the three connecting openings, and in providing N ( $N \geq 2$ ) number of axial grooves that communicate with the locking grooves. In comparison with the prior art, the claimed connector is simple in structure, convenient for being connected to and detached from tubes to be connected, good in sealing effect, and capable of improving working efficiency.

What Is Claimed Is

A tee-joint connector consisting of a tee-joint body, characterized in that: at least two circumferential grooves are disposed on an inner wall of each connecting opening of the tee-joint body with the one groove at an inner side being a sealing groove and the another groove at an outer side being a locking groove, and that N ( $N \geq 2$ ) number of axial grooves are provided on an inner wall at the outer side of the locking groove to communicate with the locking groove.

Description

The present utility model relates to a tee-joint connector, and pertains to the technology field of tubing connection.

One kind of the existing tee-joint connectors is provided with threads inside, and the connection to and detachment from the tubes are both time and manpower consuming; another kind is a flange-type tee-joint, which is of high production cost and complicated structure, and also defective in inconvenient connection and detachment.

The objective of the present utility model is to provide a tee-joint connector having simple structure, good sealing capability, convenient connection to and detachment from tubes, and low production cost.

The objective of the present utility model is achieved by the technical solution described below. The connector consists of a tee-joint body, and its particularity rests in the fact that each connecting opening of the tee-joint body

is provided at an inner wall thereof with two circumferential grooves, of which the one groove at the inner side is a sealing groove and the another groove at the outer side is a locking groove, and  $N$  ( $N \geq 2$ ) number of axial grooves are provided on an inner wall at the outer side of the locking groove to communicate with the locking groove. The width of the sealing groove can be set upon practical demand. If an O-shaped or V-shaped sealing ring is placed inside the sealing groove, its width can be set narrower; if one O-shaped sealing ring and one V-shaped sealing ring are placed inside the sealing groove, its width can be set slightly wider. There are usually 2 or 3 circumferential grooves at the inner wall of each connecting opening of the tee-joint body, with the additional groove being usually a sealing groove. The diameter of each connecting opening of the tee-joint body can be the same as those of the others, and can also be different from those of the others ever dependent upon practical demand. Such a tee-joint connector requires that several locking blocks be provided on the circumference of the end portion of the tube to be connected.

Employing the aforementioned technical solution, the present utility model possesses the advantages of convenience in connection with and detachment from the tubes, saving both time and manpower in comparison with the prior art; the placement of the sealing groove enhances the sealing effect, and is simple in structure, easy for fabrication and low in production cost.

Explanations of the Accompanying Drawings:

Fig. 1: a structural diagram of one embodiment according to this utility model;

Fig. 2: a sectional view cut along the line A-A of Fig. 1;

Fig. 3: a structural diagram of another embodiment according to this utility model; and

Fig. 4: a sectional view cut along the line A-A of Fig. 3.

The claimed technical solution is further explained below with reference to the embodiments of the present utility model in conjunction with the accompanying drawings.

Refer to Figs. 1 and 2 for Embodiment 1. In order to clearly see the connection relationship with the tubes, tubes and sealing rings are also included in these figures. The three connecting openings 20, 30, 40 of the tee-joint connector have the same diameter, and they are integrated with the tee-joint body as a whole. Of the two circumferential grooves on the connecting opening 20, one is a sealing groove 22 in which an O-shaped sealing ring 23 is embedded, and

another is a locking groove 21 in which a locking block 51 of a tube 50 is locked. Of the two circumferential grooves on the connecting opening 30, one is a sealing groove 32 in which an O-shaped sealing ring 33 is embedded, and another is a locking groove in which a locking block 61 of a tube 60 is locked. Of the two circumferential grooves on the connecting opening 40, one is a sealing groove 42 in which an O-shaped sealing ring 43 is embedded, and another is a locking groove 41 in which a locking block 71 of a tube 70 is locked. Four axial grooves are evenly arranged on the inner wall of each connecting opening to communicate with the locking groove. For instance, four axial grooves 24 (Fig. 2) on the connecting opening 20 communicate with the locking groove 21. The connecting and detaching process is as follows: the locking blocks 51, 61, 71 on the tubes 50, 60, 70 are respectively aligned with the four axial grooves of the connecting opening in which they are located, and are then pushed toward the direction of the tee-joint body 10; till these locking blocks enter the junction between the locking groove and the axial grooves; the tubes 50, 60, 70 are rotated so that the locking blocks 51, 61, 71 are respectively locked into the locking grooves 21, 31, 41, so as to complete the connection process with the tubes. When it is needed to detach from the connected tubes, the tubes 50, 60, 70 are rotated in a reverse direction, so that the locking blocks 51, 61, 71 thereon are respectively detached from the locking grooves 21, 31, 41 to enter the axial grooves, and the three tubes are pulled outwards along the axial grooves, so that they are detached from the tee-joint connector.

Refer to Figs. 3 and 4 for Embodiment 2. The structure of this tee-joint connector is substantially the same in structure as that of Embodiment 1. There are two distinctions, however, one of which is that the sealing grooves 22, 32, 42 are comparatively wider, in each of which are imbedded an O-shaped sealing ring and a V-shaped sealing ring; another distinction is that the diameter of the connecting opening 30 is smaller than the diameters of the connecting openings 20, 40, while the diameters of the connecting openings 20, 40 are identical. As compared with Embodiment 1, this embodiment has better sealing effect and is applicable for connection with tubes of varying diameters, but the process of connection to and detachment from the tubes is the same as that of Embodiment 1.

Ever dependent upon practical demand, it is also possible to provide a tee-joint connector in which each connecting opening has 2, 3, 5, 6... axial grooves, or a tee-joint connector having connecting openings with non-varying diameter, and a sealing groove capable of accommodating two sealing rings, or a tee-joint connector having connecting openings with varying diameter, and a sealing groove capable of accommodating only one sealing ring, as all of these are covered within the protection scope of the present utility model.

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## [12] 实用新型专利说明书

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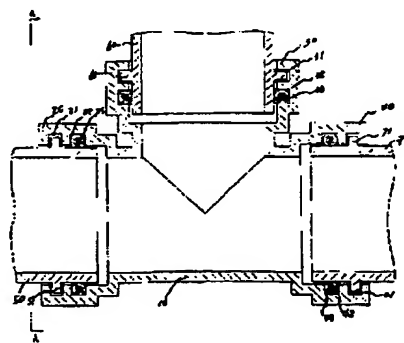
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[54]实用新型名称 三通连接器

[57]摘要

本实用新型公开了一种三通连接器,属管道联接技术领域。它由三通体组成,特点是,在三通体的三个连接口内壁上设有密封槽和锁紧槽,并设  $N$  个 ( $N \geq 2$ ) 与锁紧槽相通的轴向槽,与现有技术相比,具有结构简单,与待连接管连接、拆卸方便,密封效果好,能大大提高工作效率。



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# 权 利 要 求 书

一种三通联接器，它由三通体组成，其特征是，在该三通体每个连接口的内壁上至少设有 2 道圆周槽，靠近里面的一道是密封槽，靠近外面的一道是锁紧槽，在锁紧槽外侧的内壁上设与其相通的  $N$  个 ( $N \geq 2$ ) 轴向槽。

# 说明书

## 三通联接器

本实用新型涉及一种三通联接器，属管道联接技术领域。

，现有的三通联接器，一种其内设有螺纹，与管的连接，拆卸费时，费力；另一种为法兰式三通，成本高，结构复杂，同样存在接连，拆卸不便的弊端。

本实用新型的目的是，提供一种结构简单，密封性好，与管的连接、拆卸方便，成本低的三通连接器。

本实用新型的目的是通过以下技术方案来达到的。它由三通体组成，其特殊之处是，在该三通体每个连接口的内壁上至少设有2道圆周槽，靠近里面的一道是密封槽，靠近外面的一道是锁紧槽，在锁紧槽外侧的内壁上设与其相通的N个（ $N \geq 2$ ）轴向槽。密封槽的宽度可根据需要设定。若其内放置一根O型或V型密封圈，其宽度可窄些；若其内设置O型、V型密封圈各一根，则其宽度应稍宽些。三通体每个连接口内壁上的圆周槽一般为2道，若为3道，则多出的一道一般为密封槽。三通体每个连口的口径可以相同，也可以不相同，应根据需要设计。这种三通联接器，要求被连接管的端部圆周上带有几个锁块。

由于本实用新型采用了上述技术解决方案，使其与现有技术相比，具有与管的连接、拆卸更加方便，省时、省力；密封槽的设置，使密封效果增强，而且结构简单，制造容易，成本低。

### 附图图面说明

图1——本实用新型一个实施例的结构示意图

图2——图1的A-A剖视图

图3——本实用新型另一个实施例的结构示意图

图4——图3的A-A剖视图

下面结合附图给出本实用新型的实施例，用来进一步说明技术解决方案。

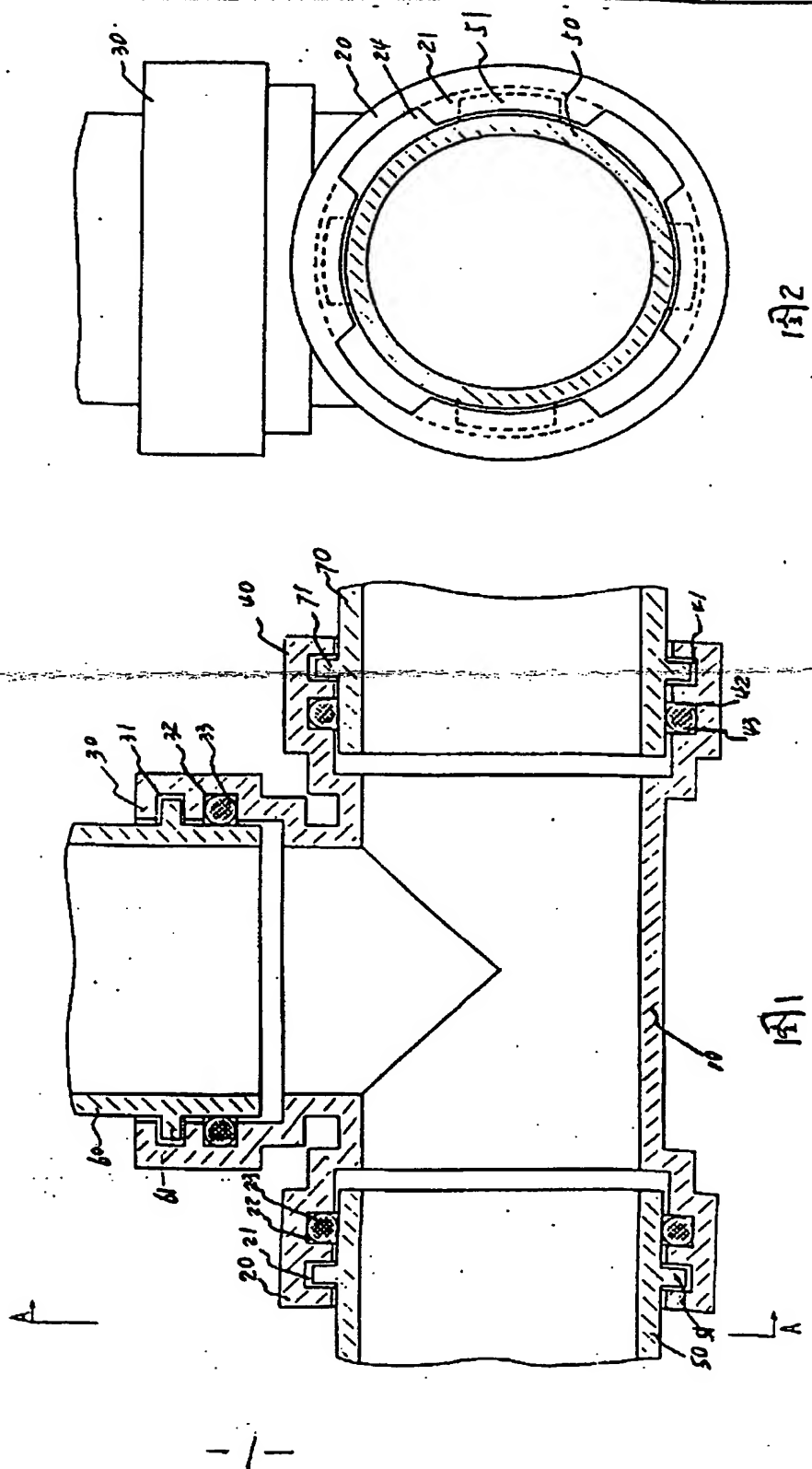
实施例 1，参考图 1、图 2。为了更清楚地看出与管的连接关系，图中也包括管和密封圈。这个三通联接器的三个连接口 20、30、40 的口径相同，它们与三通体连接为一体。连接口 20 上的两道圆周槽，一个是密封槽 22，O 型密封圈 23 嵌在其内，另一个是锁紧槽 21，管 50 上的锁块 51 卡在其内。连接口 30 上的两道圆周槽，一个密封槽 32，O 型密封圈 33 嵌在其内，另一个是锁紧槽，管 60 的锁块 61 卡在其内。连接口 40 上的两道圆周槽，一个是密封槽 42，O 型密封圈 43 嵌在其内，另一个是锁紧槽 41，管 70 的锁块 71 卡在其内。在每个连接口的内壁上，均匀布设了 4 个轴向槽，与锁紧槽相通。如连接口 20 上的 4 个轴向槽 24（图 2）与锁紧槽 21 相通。连接、拆卸过程是：使管 50、60、70 上的锁块 51、61、71 分别对准所在连接口的 4 个轴向槽，然后向三通体 10 方向推进，待这些锁块进入到锁紧槽与轴向槽交会处时，转动管 50、60、70，则锁块 51、61、71 分别卡到锁紧槽 21、31、41 内，从而完成与管的连接过程。欲使其与被连接管分离，则向相反方向转动管 50、60、70，其上锁块 51、61、71，分别脱离锁紧槽 21、31、41，而进入轴向槽，沿轴向槽外拉三管，即可达到与三通联接器的分离。

实施例 2，参考图 3、图 4。这个三通联接器的结构与实施例 1 基本相同。不同点有两个，一是密封槽 22、32、42 较宽，均嵌入一个 O 型密封圈和一个 V 型密封圈；二是连接口 30 的口径小于连接口 20、40 的口径，连接口 20、40 的口径相同，与实施例 1 相比，密封效果将会更好，适宜于变径管的连接。与管的连接、拆卸过程同实施例 1。

根据需要，还可以给出每个连接口有 2 个、3 个、5 个、6 个……轴向槽的三通联接器或连接口不变径，而密封槽能容纳两个密封圈的三通联接器；或联接口变径，而密封槽只能嵌入一根密封圈的三通联接器，都属本实用新型的保护范围。

10.11

说明书附图





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